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A replication study of a blood pressure monitoring program

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A REPLICATION STUDY OF A BLOOD PRESSURE MONITORING PROGRAM

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ABSTRACT

A REPLICATION STUDY OF A BLOOD PRESSURE MONITORING PROGRAM

by Kathleen Hansell

A descriptive nonexperimental survey was used to measure levels of adherence to treatment among elderly hypertensive clients in a blood pressure monitoring program to promote client education and self-care. The 16 subjects were selected from a nonprobability convenience sample of citizens aged 60 years and older who met with the nurse researcher for 12 weeks. The subjects were given a pre- and posttest Self-Reporting Adherence Scale (SRAS) questionnaire and blood pressures were recorded at the beginning and at completion of the program. Educational instruction was given in English and Spanish.

The results indicated that there was a statistically significant difference between the pretest and posttest SRAS. However, no significant difference was noted between the first blood pressures taken at the beginning and at completion of the program. The participants reported benefiting from the exposure to the educational sessions.

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To Freeda for editorial assistance

and

to my husband, Jim,

for his love and patience

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Chapter 1

INTRODUCTION

The baby boom generation is beginning to join the ranks of senior citizens and will dramatically increase the number of older adults. One in five Americans will be eligible for Social Security and Medicare when the baby boom generation begins to retire early in the next century (Vierck, 1990). At the present time, over a third of the American population aged 65 years and older are affected by hypertension (National Center for Health Statistics, 1990). The Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V, 1993) estimated that as many as 50 million Americans had elevated blood pressure or hypertension. Due to the high incidence of hypertension and its consequences on the cardiovascular system, hypertension directly affects the quality of health in the general population and it increases the need for health services. In 1990, it was estimated that hypertension precipitated 500,000 strokes causing 150,000 deaths, 1 million heart attacks, and 500,000 heart attack deaths.

There is substantial evidence that risks related to hypertension increase concomitantly with advancing age. The 1993 report of the National

High Blood Pressure Education Program Working Group (NHBPEP Working Group, 1994) concluded that high blood pressure is one of the most important and most common of the risk factors for cardiovascular disease. The elderly client diagnosed with hypertension is advised by a health care professional to make major lifestyle changes and to continue medication permanently unless otherwise instructed. If the elderly individual perceives that the drugs are more for symptomatic relief than for chronic maintenance, then this perception could lead to poor adherence to long-term treatment (Ascione, 1994). Hypertension is recognized as a major health risk for the elderly in the 1990s. It is important to help facilitate the management of this chronic illness by identifying more appropriate ways to employ self-care strategies and health care services.

The community health nurse can promote development of a positive self-care attitude in the elderly hypertensive individual through information, education, and positive feedback. The aim of this study was to explore the elderly hypertensive's intent to adhere to a blood pressure treatment program. Orem's (1980) theory of self-care provided the conceptual framework for this study.

Background of the Problem

Hypertension increases the risk of peripheral vascular disease, congestive heart failure, aortic aneurysm, and renal failure (Stamler, Stamler, & Neaton, 1993). Consequently, the prevention and treatment of hypertension has become a priority for the United States' health care system. Hypertension is one of the most widespread chronic conditions for which medication is prescribed and taken on a regular basis. Most cases of hypertension are of unknown etiology and result from a generalized increase in resistance to flow in the peripheral vessels (arterioles). Such cases are known as primary or essential hypertension. Treatment of essential hypertension is aimed at reducing blood pressure to normal or near-normal levels. This is believed to prevent or halt the slow, perhaps permanent, damage caused by constant excess pressure (Black & Matassatin-Jacobs, 1993). When complications occur, many patients require long-term health care (Stamler et al., 1993).

Programs for detecting hypertension and providing follow-up treatment have not been uniformly successful. The reasons for failure of some of the programs to detect and treat hypertensive clients were identified as follows: (a) failure of the client to visit the doctor or attend a

blood pressure screening clinic within 6 months after diagnosis, (b) failure to take medications, and (c) non-compliance with diet and exercise. If the clients fail to appear at follow-up visits within 6 months, many individuals will remain as untreated hypertensives (McClellan, Hall, Brogan, Miles, & Wilbur, 1988). Providing education aimed at preventing hypertension can be effective in preventing more serious cardiovascular disease (Moser, 1994) and can result in considerable reduction in disability, hospital admissions, and mortality (JNC V, 1993). Health care treatments for high blood pressure are expensive and require long-term commitment by: (a) the individual, (b) the family caregivers, and (c) health care professionals. Preventive programs require more time spent by the health care professional, but the benefits result in better health for the individual and lower long-term cost to society and the individual.

Treatment for hypertension requires that the client adhere to a program to control and reduce blood pressure. This study replicated portions of a study by Michnowicz (1989) to describe blood pressure control and adherence to a prescribed regimen for elderly hypertensives. Whereas Michnowicz focused on monitoring and measuring adherence to medication regimes, this researcher focused on providing information and education

that would enable self-care. The Self-Reporting Adherence Scale (SRAS) was used to measure the client's perceived level of adherence before and after the educational program. Blood pressures were monitored weekly during the 12-week program.

Problem Statement

Studies have shown that early and effective treatment of hypertension required a strong adherence to the regime by elderly hypertensive clients. Adherence has been related to knowledge and self-care abilities (Ascione, 1994). One factor in the success of controlling or reducing high blood pressure is adherence to the regimen prescribed for elderly hypertensive clients. Lack of adherence to treatment of hypertension often leads to other serious medical complications.

Research Questions

The research questions are:

1. What is the level of adherence among elderly hypertensive clients?

2. What is the level of hypertension among clients in a blood pressure monitoring program?

Purpose and Need

Clients over 60 years of age diagnosed with high blood pressure are at risk for further impairment of health due to complications from hypertension. The purpose of this study was to monitor the blood pressure control and the degree of adherence with their prescribed regimen among a group of elderly hypertensives in a blood pressure monitoring program. The aim of the hypertension monitoring program was to educate the client and promote self-care.

Adequate assessment of the client's self-care abilities with identification of their strengths and weaknesses by health care providers was critical to providing data for successful adherence to prescribed medical regimens (Snyder et al., 1991). This study assessed the level of adherence to a health regimen and the blood pressure levels on one group of elderly hypertensives in a blood pressure monitoring program before and after a 12-week program of patient education. The initial assessment can assist the nurse in identifying potential problems of adherence to a treatment plan. Studies on elderly hypertensives have shown that adherence is more likely when the elderly hypertensive has sufficient knowledge of normal blood pressure parameters and drug benefits (Miller, Wikoff, &

Hiatt, 1992). Pesznecker, Patsdaughter, Moody, and Albert (1990) maintained that the home care nurse was "in a key role to determine possible non-compliance associated with the medication regimen" (p. 16).

Definition of Terms

The following definitions were used in this research study:

1. Adherence is the degree to which patient behaviors coincide with the clinical recommendations of health care providers (Rand, 1990). Previous studies used the term compliance for this concept.

2. Elderly client is a participant who is over age 60 years and is in an elderly hypertensive blood pressure monitoring program.

3. Hypertension is a condition in which the client has a higher blood pressure than judged to be normal as described in Taber's Cyclopedic Medical Dictionary (Thomas, 1993). Hypertension is defined as a condition in which the mean arterial blood pressure is elevated. The systolic blood pressure is equal to or greater than 140 mm Hg, and diastolic blood pressure is equal to or greater than 90 mm Hg. Hypertension is divided into four stages from I to IV and classified from mild to very severe hypertension (JNC V, 1993) (see Appendix A).

4. Suggested prescribed hypertensive regimens are recommended treatments for high blood pressure. Treatments vary depending on the hypertensive stage. Health care providers first recommend nonpharmacological treatments such as change in diet and moderate exercise. When high blood pressure is diagnosed, the health care provider introduces an approach with medication or medications—starting with one drug only, a diuretic. The next level of pharmacological treatment for high blood pressure is the prescription of a sympathetic depressant (beta-adrenergic blocking agent), and, finally, the additional angiotensin converting enzyme (ACE) inhibitors are prescribed in severe cases of hypertension (JNC V, 1993) (Appendix B).

Summary

Hypertension in older adults is a major determinant for increased risk of cardiovascular disease, especially stroke. However, other chronic health problems may result including congestive heart failure or impaired renal function. The study of adherence and the hypertensive client was significant to nursing because education focused on the careful management of hypertension has been associated with preventing the more serious cardiovascular diseases (Moser, 1994). According to Stamler et al.

(1993), clients with hypertension who developed chronic health problems experienced further limitations in performing the independent activities of daily living, such as: (a) bathing, (b) grooming, (c) cooking, and (d) walking. The adherence of clients to long-term treatment of chronic hypertension may be hampered by problems such as the directions for the medications which are often difficult to follow. Health care providers can encourage clients to adhere to their treatment regime with clear and continuous communication. Programs to treat patients and prevent morbidity focus on facilitating the client's life-long commitment and adherence to modifications in diet, medications, and exercise.

Health care organizations currently face tremendous challenges in providing care to the sick in the United States. Concerns over the issues of responsibility for health care of the elderly have been raised. As people live longer, the risk of chronic illness increases, negatively affecting their quality of life. The treatment of hypertension, one of the most common chronic illnesses among elderly individuals, can prevent serious complications. These complications are often very costly to the individual in terms of reduced health status, but they are also costly to society in terms of increased health care costs.

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

This chapter presents the conceptual theory of Dorothea Orem (1980, 1985, & 1991) and reviews the literature on hypertension and patient adherence to prescribed regimens. According to Lobiondo-Woods and Haber (1994), a conceptual framework guides research and defines the procedures used to answer the research questions. Nursing theories such as Orem's (1980) conceptual theory of self-care deficit are uniquely qualified to guide nursing or health-related questions.

Conceptual Framework

Orem's (1980) nursing theory provided the conceptual framework utilized in this study. The Self-Reporting Adherence Scale (SRAS) (Michnowicz, 1989) (Appendix C) was used to monitor self-care and to measure adherence to the prescribed regimen for elderly hypertensive clients. Orem (1985) stated that "contact and communication among persons who can benefit from nursing...define the first prerequisite for the provision of nursing" (p. 43). The basic tenet of Orem's theory was the belief that human beings are innately capable of self-care. Self-care was defined as the purposeful activity that a person does in order to maintain

life and health (Penn, 1988). Orem defined a self-care deficit as a client's inability to take appropriate actions for self-care.

There were three concepts in Orem's (1980) conceptual theory of nursing. The first concept was the theory of self-care. Self-care requisites were the basis of Orem's self-care system. Riehl-Sisca (1989) interpreted the self-care requisites as actions that the individual had performed from birth to meet his or her self-care needs in maintaining life, health, and a state of well-being, and these were learned through interpersonal relations and communications. The ability to engage in self-care was conditioned by: (a) age, (b) development, (c) state of health, (d) life experiences, (e) socio-cultural orientation, and (f) the availability of resources. These were known as Basic Conditioning Factors (BCFs). The BCFs modify the self-care requisites.

Self-care deficit was the second concept defined by Orem (1991) as occurring when individual therapeutic self-care demands (TSCDs) were greater than the therapeutic self-care capabilities; the theory of self-care deficit was determined by the actions required for self-care. Orem theorized that a self-care deficit occurred when therapeutic self-care demands exceeded the person's ability to provide self-care.

Lastly, the third concept stated that the nursing system can assist the client to meet his or her therapeutic self-care demand and to eliminate the self-care deficit on three levels. The three levels of nursing systems were: (a) wholly compensatory where the nurse or caregiver performs all the self-care operations for the client, (b) partly compensatory when the client performs some but not all self-care activities, and (c) the supportive-educative nursing system that assists the nurse researcher to implement guidance and teaching (Orem, 1991).

Orem (1985) divided the nursing process further into: (a) diagnosis and prescription, (b) designing and planning, and (c) production and management of systems of nursing assistance. The first step, diagnosis and prescription, identified factors affecting the way in which each self-care requisite can be met by the client. In the initial assessment of the client, the nurse gathers data on personal information and individual treatment programs. The data can show potential nonadherence problems. Orem noted that before completing the diagnostic step the nurse needs to answer these five questions:

1. What is the patient's therapeutic self-care demand?
2. Does he or she have a self-care deficit in meeting this demand?
3. What is the reason for and nature of the deficit?

4. Should the patient be helped to change the self-care practice, or should developed therapeutic capabilities be protected?

5. What is the patient's potential and willingness for performing self-care, increasing self-care knowledge, learning self-care techniques, and incorporating essential self-care measures into his or her activities of daily living? (Orem, 1980, p. 203).

Orem theorized that the dimensions of the nursing system were social, interpersonal, and technological and that there were three types of nursing systems. Riehl-Sisca (1989) defined the dimensions of Orem's nursing system as the relationship between nurse and client. The social and interpersonal relationship between the nurse and client was the contract. This was defined by the professional role of the nurse and the personal help given to the client. How the client received, understood, and responded to the help given by the nurse was the client's part of the contract. The technological dimension was defined by the knowledge and ability of the nurse to complete the contract. As part of nursing and nursing practice, Orem (1991) defined the nurse-client relationship as complementary. Nurses assisted clients to act independently for their health-related

self-care requisites by supplying the necessary conditions for clients to maintain or increase capabilities for self-care. This research project incorporated the concepts in Orem's theory.

This researcher designed and planned the category of nursing actions which were appropriate for the blood pressure monitoring program--the supportive-educative nursing category of Orem's theory. For example, this study used a hypertensive monitoring program that recorded clients' blood pressures and educated them about medication, nutrition, and activity.

The third step, production and management of systems, included implementation of the supportive-educative program developed by the researcher. The program included the clients' medication treatment regimens and reinforcement of appropriate health habits. Clients responded by taking responsibility for their own treatment program. An important part of this process was establishing appropriate goals and adjusting behavior to achieve results specified by those goals (Orem, 1985).

Each of these systems was influenced by the self-care requisites (SCRs) that were divided into three categories: (a) universal self-care requisites that are common to all human beings requiring the maintenance of air, water, food, and so forth, (b) developmental self-care requisites that promote processes for life and maturation, and (c) health deviation

self-care requisites when a client seeks and participates in medical care for health deviations (Orem, 1985). The SCRs were modified by the Basic Conditioning Factors. When self-care requisites were not met, the therapeutic intervention of the nursing system was needed to meet the self-care requisites. Self-care deficits can be diminished through the use of: (a) client re-education, (b) self-monitoring, (c) contracting, and (d) self-help groups (Penn, 1988). In contrast, research has shown that an institution can promote dependence rather than independence. In a study of nursing home residents by Jirovec and Maxwell (1993), the residents perceived that they were limited in their self-care and that they had little control in decision making relative to their care and life in the nursing home. These perceptions led to a decrease in independent self-care activities.

Active interventions encouraged people to make voluntary but informed decisions (Janz, Becker, & Hartman, 1984). Screening programs started in recent years have detected large numbers of individuals with high blood pressure, but the records from these programs have shown a high rate of failure of the diagnosed clients to follow through on maintenance programs. Chang, Uman, Linn, Ware, and Kane (1985) utilized Orem's

self-care theory on adherence to health care regimens among elderly women with chronic illness and noted that clients who had low levels of psychosocial support were less likely to adhere to their medical regimens. Also, Chang et al. (1985) reported that patient participation was not related to intent to adhere. The investigation suggested that pre-existing satisfaction with health care and a developed social network may be important predictors of adherence.

Summary of Conceptual Framework

The conceptual model of self-care developed by Dorothea Orem (1980) provided the conceptual framework for this study. The Self Reporting Adherence Scale using a Likert scale questionnaire measured the subjects' performance of self-care requisites for maintaining their health. The social dimension of the nursing system focused on the role of the nurse and client in which a contractual relationship was established for the purpose of obtaining nursing support. The interpersonal dimension of the relationship enabled both the nurse and client to identify, understand, and perform essential health care and related activities according to each one's respective role in the situation (Orem, 1985). At the primary level of prevention, the nurse guided the client to learn self-care practices to maintain and promote personal health and development to prevent specific

disease. Programs that promote optimum health in the home or community setting help the client learn self-care skills. It is essential to consider all factors in the areas of adherence. As part of the nursing system, Orem's (1991) supportive-educative concept can assist in establishing a contractual agreement between the client and nurse. The contract between nurse and client assists adherence to the prescribed hypertensive medical regimen.

Review of Related Literature

The Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V, 1993) proposed a new classification of blood pressure for adults 18 years and older and discarding the terms mild and moderate hypertension (Appendix A). The report also suggested focusing on a progressive program to treat the high normal systolic blood pressure of 130-139 mm Hg in older adults: first, by lifestyle modification and, later, by implementing drug therapy if no change in blood pressure readings occurred. For this reason, the literature review on hypertension and blood pressure programs for the elderly focused on the most recent research on prevention and treatment of hypertension, particularly research on adherence and behavioral modification programs in the elderly population.

Hypertension

A diagnosis of hypertension generally results in a lifelong commitment to treatment in order to reduce the risks of cardiovascular disease. The treatment does not cure the condition, but clients who are treated for hypertension and change their behavior are able to maintain their lifestyle with fewer complications (NHBPEP Working Group, 1994). Furthermore, treatment programs allow health care providers to reinforce the positive aspects of continuing antihypertensive therapy that reduces or prevents damage to target organs affected by cardiovascular disease. By providing feedback, these treatment programs use follow-up plans to educate and give positive support to the elderly hypertensive's attitude and behavioral changes (Ascione, 1994).

At the community level, the major recommendations for hypertensive clients by the JNC V (1993) stressed mass public education and lifestyle modifications. These modifications included: (a) dietary changes such as reducing calories, limiting dietary sodium intake, and increasing potassium in the diet, (b) daily exercise, and (c) decreased alcohol consumption and no smoking. A restricted salt intake was of primary importance because salt can adversely affect the blood pressure (Stamler et al., 1993). Also, the

cardiovascular system improved when fat and alcohol intake were reduced. By reducing smoking or not smoking, the hypertensive individual reduced the risk of damage to the heart and lungs (JNC V, 1993).

Health care professionals can identify the client's reluctance or avoidance of decision making to reduce his or her high blood pressure through interviews and questionnaires. As outlined by NHBPEP Working Group (1994), high blood pressure in the elderly should be reduced gradually. Lifestyle modifications should be tried first before introducing drug therapy. If these measures are unsuccessful in reducing the blood pressure, then antihypertensive drug therapy should be introduced. However, these measures are only successful in reducing blood pressure when the client adheres to the lifestyle modifications and treatments recommended.

In 1993, the JNC V estimated that the number of hypertensive subjects aware of their condition had increased dramatically. In addition, the percentage of hypertensive patients taking medication and controlling their condition has improved substantially. Another benefit has been a decline in cardiovascular mortality in all ages of the population. However, the Systolic Hypertension in the Elderly Program Cooperative Research Group (SHEP CRG, 1991) reported an increase in cardiovascular disease in

patients age 60 years and older whose isolated systolic blood pressure was greater than 155 mm Hg and diastolic blood pressure was less than 90 mm Hg. The SHEP CRG (1991) report recommended that persons over age 60 with a systolic blood pressure greater than 155 mm Hg be treated with step-care therapy (see Appendix B).

The World Health Organization/International Society of Hypertension (WHO/ISH, 1993) Guidelines for the Management of Mild Hypertension reported that the risk of cardiovascular disease with a recorded blood pressure of 140/90 (stage I, see Appendix A) varied greatly from country to country. For example, in Russia and China, the incidence of stroke in the population diagnosed with hypertension stage I was four times greater than in the United States (U.S.). The studies indicated that diagnosed hypertensives in these countries were not treated with medication; whereas, in the U.S., clients with similar blood pressure readings were treated. The report suggested identifying certain cardiovascular risk factors for treatment of hypertension stage I. The risk factors were: (a) age, (b) gender, (c) family history, (d) above normal range for systolic or diastolic blood pressure, (e) smoking, (f) obesity, and (g) elevated cholesterol levels. Also, the WHO/ISH (1993) guidelines recommended that the four stage levels clearly defining the absence,

presence, or severity of complications associated with hypertension be adopted.

Treatment of Hypertension

Randomized clinical trials have become the standard method of determining treatment effects in the last four decades, and studies have detected a positive therapeutic effect such as lower blood pressure recordings when elderly hypertensives were treated (Davidson & Caranasos, 1987). For example, the Swedish Trial in Old Patients with Hypertension (Dahlof et al., 1991) evaluated active antihypertensive therapy versus placebo in "old elderly" patients, aged 70 to 84 years; the results showed a significant difference. Fatal and nonfatal strokes were reduced by 47% in the treated patients according to the WHO/ISH (1993) report.

In the United Kingdom, a controlled trial by the Medical Research Council Working Party (MRC Working Party, 1992) was conducted on more than 4,000 subjects to establish whether treatment with a diuretic or beta blocker in hypertensive older adults reduced risk of stroke, coronary heart disease, and death. The design was a randomized, placebo controlled, single blind trial. The results suggested that when clients took the prescribed medications, hydrochlorothiazide and amiloride, they

significantly reduced the risk of stroke and all cardiovascular events in older hypertensive adults.

According to the NHBPEP Working Group (1994), preventive hypertension programs have not been consistent over a long period in assisting the elderly to reduce their blood pressure. Health care professionals have been inconsistent when treating the diagnosed hypertensive patient (Pickering, 1994). For example, patients' blood pressures were not measured at every visit to the doctor's office, and health care workers did not record six or more blood pressure readings over the first three visits to get a blood pressure baseline on a patient. The NHBPEP Working Group (1994) reported that "raised blood pressure in the elderly and the increased prevalence of hypertension in this population are not benign occurrences and should not be viewed as a normal or inevitable consequence of aging" (p. 275). Some of the reasons that many of the elderly hypertensive individuals fail to comply with a long-term treatment for high blood pressure are: (a) lack of understanding of drug therapy, (b) difficulty in taking medications due to poor eyesight, or (c) gastric upset (Aubin, Vezina, Fortin, & Bernard, 1994). One observer noted that health care professionals were unclear when communicating with patients about

lifestyle changes and did not stress the benefits of the lifestyle modifications (NHBPEP Working Group, 1994).

In addition, the report by SHEP CRG (1991) advised that elderly hypertensives over age 65 with isolated systolic hypertension begin a step-care drug treatment to reduce the incidence of total stroke by 36%. In this report, clinical trials documented that intervention treatments had shown that the benefit of antihypertensive drug therapy was particularly high in the elderly. The SHEP CRG report indicated that the benefits of intervention for patients of any age with isolated systolic blood pressure greater than 160 mm Hg, up to and including patients who are 80 years old, were: (a) improved quality of life and (b) decreased health care costs. On the basis of the previous studies and the report from the JNC V (1993), the diagnosis of hypertension in the elderly should be given major consideration by initiating public education programs for the primary prevention of high blood pressure.

Patient Adherence

In the past, the client who followed the regimen proposed by the health care giver was considered compliant. Patient adherence is defined as the behavior whereby patients consume the prescribed therapeutic regimens. The aim is to teach the elderly client about hypertension and to

introduce lifestyle modifications. If the client follows these modifications, potential health problems associated with hypertension should be reduced. Education efforts focus on knowledge and motivation to learn. Feedback on performance is important. Building a therapeutic alliance between client and health care provider in which clients adhere to goals they have set using skills they have acquired will more likely promote adherence (Janz & Becker, 1984). A collaborative relationship through knowledge and nursing contracts assists the client to make decisions regarding medical regimens.

The literature on hypertension control and the elderly patient's ability to adhere with a regimen aimed at reducing and controlling high blood pressure has become a priority for community-based programs. A research study by Sands and Holman (1985) on adherence to a medical regimen by elderly hypertensive patients revealed that poor communication by health care professionals was a factor in nonadherence. The study, conducted over a 4-week period, sampled 93 individuals. According to the study, the majority of individuals complied with the medication regimen because they were "following doctor's orders," but clients sometimes forgot to take their medications. The study also reported that older individuals were high on the self-reported compliance scale in spite of their age. The

study concluded that health care professionals needed to devote more time to help clients devise a medication schedule to reduce forgetfulness.

In a study on how physicians' attitudes influenced clients compliance, O'Hair, O'Hair, Southward, and Krayer (1987) recruited 114 subjects of mixed ethnic backgrounds from a Texas university. Gender was not identified. Each participant answered a Health Beliefs Test and was asked to respond to a written scenario describing four physician compliance strategies. The highest adherence rating was for physicians who conveyed high affect, warmth, empathy, and concern for the client's well-being, as well as high levels of information.

With regard to adherence in the general population, a study by McClellan et al. (1988) suggested that the blue collar working population had the highest rates of nonattendance, therefore, the highest rates of noncompliance at the hypertensive follow-up clinics. The study recommended establishment of hypertension control clinics in the workplace. The study also urged special attention be directed to the health care needs of the unemployed.

The NHBPEP Working Group (1994) stated that the hypertensive elderly were more likely to know about their diagnoses and treatment; however, the elderly may have encountered problems that led to

nonadherence to hypertensive treatment. The problems most likely to adversely affect the hypertensive therapy for the elderly were: (a) impediments in sight and hearing or severe tremors, (b) mild cognitive dysfunction such as short-term memory loss that cause the elderly to forget to take their medications, (c) taking multiple drugs that could produce adverse interactions, and (d) deficient diets that can cause gastrointestinal upsets when taking medication. Eisen, Miller, Woodward, Spitznagel, and Przybeck (1990) suggested that hard to read instructions were an additional reason for elderly nonadherence in taking medications. Schedules for taking medication should be as simple as possible and clearly printed in large type. Other helpful aids were memory joggers and drug dispensers.

A study was performed by Miller et al. (1992) at an outpatient Veterans Administration Medical Center Hypertension Clinic on 56 clients most of whom were male participants over a 6-month period. The findings indicated that adherence behavior was directly influenced by intention, attitude, and motivation. Clients were more likely to comply successfully with their treatment program when they had sufficient knowledge of their diagnosed condition. The participants were indirectly influenced by the perceived belief of others in the areas of diet and activity. In the area of

medication prescriptions, attitude and intention directly influenced motivation to adhere to the suggested medical regimens.

Richardson (1986) suggested that biological changes in the elderly made the margin for error smaller. The effects of nonadherence may be much more severe for the elderly client than with a younger person. The increase of side effects in the older individual may lead them to intentionally decrease their dosage. Nonintentional lack of compliance or nonadherence may be due to biological factors such as memory or perceptual problems of the elderly. These problems can be minimized with increased education.

In a metanalysis of drug compliance in the elderly, Ascione (1994) stated that strategies which center on teaching medication management skills should focus on teaching the elderly hypertensive individual about his or her drugs. He reported that compliance with medication therapy was high when an individual expressed understanding of the effects and side effects of prescribed medications for the diagnosis of hypertension and the possible complications to the cardiovascular system.

Optimal benefits of teaching the elderly hypertensive are obtained when learning, environment, subject matter, and presentation are based on their health needs (Dellasega, Clark, McCreary, Helmuth, & Schan, 1994).

Using different styles and methods to assist each individual to assimilate new information can bring about a change in behavior because not everyone processes information in the same way (Given, Given, & Coyle, 1985). Active participation by the learner in the learning process contributes to effective learning (Arndt & Underwood, 1989). The authors maintained that patient education together with patient satisfaction increased patient participation.

Michnowicz (1989) reported that there was no significant difference at the .05 level between the pretest and the posttest of the adherence rating of elderly hypertensives who regularly attended a 3-month blood pressure monitoring program. A Self-Reporting Adherence Scale (SRAS) (Appendix C) created by Michnowicz determined the degree of adherence by the elderly hypertensive who followed recommended treatments. The SRAS pretest was administered before the monitoring program began and a posttest SRAS was given after the program ended. However, lower blood pressure readings were recorded in the posttest score. There was a significant difference between the blood pressure readings that were taken before the initiation of the blood pressure monitoring program and the readings at the completion of the program ($p < .005$). These results indicated that the intervention of the blood pressure monitoring program

was effective in assisting the elderly hypertensives to reduce their blood pressure. There were two questions on the SRAS that caused problems, and Michnowicz made recommendations for improvement by changing the wording on those questions. A nonparametric sign test was used to analyze the data from the pre- and posttest scores of the SRAS. For the blood pressure recordings, inferential statistics were used. Further limitations were that the study was over a 3-month period, on a relatively small number of people that were not randomly selected.

Summary

Hypertension in the elderly is no longer considered a normal change associated with age. Elderly clients diagnosed with hypertension are at greater risk to develop chronic problems associated with cardiovascular disease, kidney problems, and strokes. Chronic diseases increase the cost of medical care. Therefore, health care professionals need to concentrate on prevention and life style modifications to lower the incidence of hypertension (JNC V, 1993).

Nurses can assist elderly hypertensives in treatment programs by raising their awareness through educational interventions. Adherence to a prescribed treatment is necessary for the control of hypertension in an individual. However, many factors may interfere with a client's ability to

adhere to a medical treatment program such as: (a) A client can have limited eyesight causing an inability to distinguish different medications; (b) A client may suffer from arthritis pain or tremors making it difficult to open medication bottles and pick out the pills; (c) A client may be forgetful which interferes with understanding or following directions; or (d) Poor motivation may occur for any number of reasons. Similarly, there are several strategies that promote adherence; for example, oral instructions supplemented by written instructions help reinforce the information. Any treatment plan has to be tailored to the individual, but, in order for any of the strategies to improve adherence, a long-term plan for monitoring and feedback should be coordinated with the client's medical care and social support system.

Treatments of hypertension have been found to: (a) lower blood pressure, (b) reduce risk of further cardiovascular damage, and (c) improve individual life quality. However, the individual must adhere to the prescribed hypertensive medical regimen over a long period of time. Communication between the client and the health care provider is one way to foster adherence. The literature indicated a substantial decrease in the level of adherence was more likely to occur the longer a client was under treatment. On the other hand, the level of adherence increased when the

client was monitored regularly and when the nurses at a community center were available for instruction or discussion.

Chapter 3

RESEARCH DESIGN AND METHODOLOGY

Research Design

A descriptive survey with a nonexperimental design was used to gather data on a group of men and women 60 years of age or older. Although the ethnicity of the group was mixed, the backgrounds of the participants were similar in their socio-economic and educational levels. This type of design allowed the researcher to collect data from clients "and use the data to justify and assess current conditions and practices or to make more intelligent plans for improving health care practices" (Lobiondo-Woods & Haber, 1994, p. 233). This study measured levels of adherence and hypertension among clients enrolled in a hypertension program in Northern California.

Subjects and Setting

The participants were selected from a nonprobability convenience sample of senior citizens, men and women. The researcher asked for clients of the senior citizen center who had hypertension to volunteer for this blood pressure monitoring program; however, everyone who wanted their blood pressure checked weekly could participate. Participants met the following

criteria: (a) gave informed consent, (b) were 60 years of age or older, (c) functioned independently with minimal assistance, (d) filled out a demographic and a Self-Reporting Adherence Scale (SRAS) questionnaire (Appendix C), and (e) were able to take part in hypertension screening for 3 months. The individuals were members of a lower socio-economic community in Northern California and attended a senior citizen facility. A total of 23 subjects, men and women from different ethnic cultures, initially agreed to participate in the research, but only 20 returned for the second week. The majority of subjects had received only a limited formal education. The racial and socio-economic status of the study group may have affected study variables; however, these were not included as factors in the statistical procedures or analyses. The questionnaire was also printed in Spanish and a Spanish speaking aide at the center assisted the researcher with the initial interviews.

Human Subjects Approval

The study protocol was submitted and received approval from the Committee for the Protection of Human Subjects, San Jose State University, San Jose, California, prior to data gathering at the clinic sites (see Appendix D). Permission from the Director of the Community Senior Center was obtained prior to the data collection (see Appendix E).

Data Collection

The researcher met with the participants individually in the general purpose room of the residential senior facility and instructed each one about informed consent and program expectations. The researcher assured each participant that their names would only be known to the researcher in order to maintain their privacy. Coding of data was carried out by providing the name with a code number on each chart. The charts were filled out and seen only by the researcher, and the information was kept locked in the researcher's office. At the conclusion of the study, the list of names and code numbers were destroyed. Demographic data were taken from the medical record chart and from the SRAS. A signed consent form was required from every participant before beginning the program (Appendix F). This researcher informed the participants that they could stop or drop the program at any time.

The study was conducted over a 12-week period. Each participant completed the pre- and posttest SRAS. The pretest scores of the two participants who dropped out of the program were not included in the analysis. Three participants were disabled and were read the pre- and posttest questions by the researcher.

At the first visit, the nurse recorded each participant's medications, if any, and their weight. Every week thereafter, the researcher met with the subjects individually and as a group. Each participant in the group was again weighed and checked for any changes in their medications.

The indirect physiological measurement of the blood pressure was measured with a mercury sphygmomanometer and recorded at the start of the monitoring program and every week thereafter for 12 weeks. The JNC V (1993) and the NHBPEP Working Party (1994) recommended using a mercury stand sphygmomanometer for accuracy because of the possibility of not diagnosing hypertension due to instrument error. The first blood pressure recordings were taken in each arm and in three different positions: (a) lying, (b) sitting, and (c) standing; however, the subsequent blood pressure measurements were recorded sitting and standing only. The sphygmomanometer rested on a table when the client was sitting and standing, and on a chair at chest level when the client was lying down. After their blood pressures were recorded, the participants moved to the dining room of the community center for the education component of the program. The Center's assistant director translated the researcher's lecture into Spanish and assisted with questions and answers. Videos were shown in English and in Spanish. There were five participants who spoke only

Spanish. The assistant also assisted the researcher with one-on-one interviews with the Spanish-speaking participants.

Description of Education Component of Program

After the pretest Self-Reporting Adherence Scale (SRAS) (Michnowicz, 1989) was administered, the participants in the research group received the program of educational materials on medication, diet, and activity. During the 12 weeks of the study, the researcher presented educational information to the participants about hypertension through: (a) lectures, (b) videos, (c) posters, and (d) handouts. The educational topics focused on: (a) nutrition, (b) exercise and activities, and (c) medication therapy, including the effects and possible side effects of specific medications. Nutritional information was given to the subjects by the researcher about foods containing salt, fat, and cholesterol that can cause physiological damage as well as information on the benefits of a moderate exercise program. The program did not include any exercise activity. To enhance individual self-care, blood pressure and medication documentation cards (Appendix G) were given to each participant for recording the data collected by the researcher. The researcher also kept a complete data set on all participants. Also, the researcher held group discussions for subjects to share personal experiences regarding their

medical regimens. At this time the nurse researcher was able to answer questions from individuals about their hypertensive regimens or about the study.

Measurement of Adherence

The Self-Reporting Adherence Scale questionnaire (Michnowicz, 1989) (Appendix C) measured participants' adherence to their blood pressure health regimen and any differences in adherence over the course of the program. The SRAS questionnaire listed 10 questions with five forced responses on a Likert scale ranging from never (1) to always (5). On the first visit, each participant in the study responded to the SRAS questionnaire in writing, and if necessary, the researcher assisted by reading the questions to the subject. Instructions were also given in Spanish by the assistant program director before the pretest. After 12 weeks on the blood pressure monitoring program, the clients again responded to the SRAS questionnaire to determine level of adherence.

Analysis Procedures

Descriptive statistics of frequencies, means, and percentages described the sample and the variables which were blood pressure and adherence for the 12-week study. The subjects' blood pressure recordings

were analyzed by a San Jose State University statistician for differences between the first and last recording (12 weeks later) using the Statistical Package for the Social Sciences (SPSS).

The compiled scores of both the pre- and posttest questionnaires were also analyzed by the San Jose State University statistician using the statistical computer program SPSS. A non-directional *t*-test was used to analyze for a difference between beginning and ending scores for (a) the SRAS scale and (b) the blood pressure recordings for each participant. The statistical analyses showed the subjects' level of adherence to their hypertensive regimen as well as any changes in their blood pressure recordings.

Chapter 4

ANALYSIS AND INTERPRETATION OF DATA

The data analyses were designed to answer the research questions which were: (a) What is the level of adherence among elderly hypertensive clients? and (b) What is the level of hypertension among clients in a blood pressure monitoring program? The purpose of the study was to assess clients in a monitoring program of elderly hypertensives for their adherence to a blood pressure regimen. The study also attempted to inform and educate the subjects in an effort to improve the health of the individuals enrolled in the monitoring and education program.

Descriptive data included the demographic and health profiles. Data were analyzed from a pre- and posttest Self-Reporting Adherence Scale (SRAS) questionnaire given to participants who attended a blood pressure monitoring program at the community center. The SRAS pretest scores were compared to the posttest scores using a *t*-test to report any significant difference. Blood pressures were recorded at the beginning of the program before the introduction of any educational information and weekly thereafter. At the completion of the study, the first and last blood pressure readings were compared for differences.

Description of the Sample

From a target population of 23, 16 participants attended each session of the 12-week study to have their blood pressure recorded and participate in the education component. The number of subjects decreased from 23 to 16 because (a) some could not commit the amount of time required to participate each week for 12 weeks, (b) some of the older citizens who attended the introductory session at the senior center could not read or write and were embarrassed when asked to fill out the SRAS instrument, (c) two dropped out in the middle of the study because the center program director requested that the researcher change the participation day from Thursday to Wednesday, and they did not attend on Wednesdays, and (d) one became seriously ill and was unable to continue.

Table 1 shows that the ages of the participants ranged from 60 to 81 years. The mean age of the participants was 69 years with a standard deviation of 6.9 years. The Hispanic ethnic background was predominant: There were 7 females and 5 males who reported a Spanish background.

Marital status of males and females was as follows: (a) 4 males and 2 females were married, (b) 1 male and 3 females were single, (c) 3 females were widowed, (d) 2 females were divorced, and (e) 1 female was separated. Of these 16 participants, there were 11 females (69%) and 5 males (31%).

Table 1

Demographic Profile of the Participants in the Blood Pressure Monitoring Program (N = 16)

Demographic Characteristic	Frequency	
	Male	Female
Age Range		
60-70	3	5
70-80	1	5
80-90	1	1
Ethnic Background		
Hispanic	5	7
African American	0	1
Caucasian	0	3

Medical histories revealed that the earliest age that a participant was diagnosed with a hypertensive health profile was at 38 years, and the latest age of diagnosis was 76 years. The mean length of time that participants in

the program had been diagnosed with high blood pressure was 9 years with a standard deviation of 9.3 years. Among the participants, 6 (38%) were first diagnosed with hypertension before the age of 60, 7 (43%) were over 60 years of age, and 3 (19%) were 70 years and older. Weekly weights revealed that 69% of the participants were overweight.

Two of the 16 participants were not taking any medications for hypertension (non-pharmacological approach), but they were controlling their blood pressure through diet and exercise. They volunteered to participate in the program in order to receive the educational information. Five participants were being treated with multiple medications for hypertension (multiple pharmacotherapy), and 9 participants were receiving only one antihypertensive medication (mono pharmacotherapy). The three approaches of diet, medication, and exercise follow the recommendations of the Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V, 1993) for individualized step-care therapy for elderly hypertensives (Appendix B).

The 9 participants on mono pharmacotherapy were being treated only for hypertension: (a) 4 were taking diuretics (Hydrochlorothiazide or Lasix), (b) 1 was taking a sympathetic depressant (Ismelin), (c) 2 were

taking a beta receptor blocker (Atenolol), (d) 3 were taking calcium channel blockers (Cardizem, Nifedipine), and (e) 2 participants were taking Angiotensin-converting enzyme (ACE) inhibitors (Capoten, Vasotec). These 9 individuals stated that they adhered to diet restrictions, such as no added salt and low fat, and that they did some form of daily exercise, either walking or exercising at home.

The 5 participants taking multiple medications had multiple health problems. For example, 3 participants had Insulin Dependent Diabetes Mellitus (IDDM). Two of the diabetic participants were obese, complicating both diagnoses of hypertension and IDDM. Two participants were taking medications for serious heart problems that prevented them from exercising on a regular basis. Each of the 5 participants were receiving a diuretic combined with 1 to 2 antihypertension medications, and 3 of the participants were taking medication to reduce cholesterol levels.

Analysis of the Data

Adherence

The level of adherence among elderly hypertensive clients was determined by administering a Self-Reporting Adherence Scale (SRAS) questionnaire to the participants attending the blood pressure program as a pretest before program implementation, and as a posttest at the completion

of the program. The scores of the SRAS pretest and posttest responses were analyzed with a 2 tailed *t*-test statistic used to measure differences between groups.

The pre- and posttest scores of the responses were analyzed on each of the 10 SRAS questions for the 16 participants. The range of responses for each item ranged from never (1) to always (5). Table 2 shows the results of the 2 tailed *t*-test. After the 12 weeks of education, there was a statistically significant improvement in adherence to taking medication as ordered (question 1: $p = .007$). On the pretest 50% ($n=8$) responded always to question 1, but on the posttest 81% ($n=13$) responded always. Questions 2, 3, 5, and 7 were all related to medications and/or following the physician's advice, and the responses indicated a statistically significant improvement in adherence on all of them ($p = .005$ to .039). Participants also indicated improved adherence to performing regular exercise (question 9: $p = .014$). In questions 1 through 9, adherence was better if the response was always, but a response of never was the preferred response to question 10 regarding advice from family or friend.

Table 2
Results of t-tests for Paired Samples of Pre- and Posttest SRAS Questionnaires (N = 16)

SRAS Questions	Pretest Mean (SD)	Posttest Mean (SD)	t test p value
Do you:			
1. Take medication as ordered?	4.06 (1.21)	4.63 (1.03)	.007
2. Take medications when you feel well?	3.88 (1.31)	4.44 (1.10)	.007
3. Take NEW medications even if you feel worse?	2.20 (1.37)	3.20 (1.80)	.005
4. Get refills before you run out of medications?	4.20 (1.22)	4.60 (1.03)	.054
5. Get regular check-ups for diagnosis of high blood pressure?	3.94 (1.24)	4.60 (1.03)	.007
6. Remember to take your blood pressure medications?	3.60 (1.41)	4.13 (1.31)	.178
7. Follow doctor's advice to avoid certain foods?	2.94 (1.34)	3.81 (1.51)	.039
8. Follow doctor's advice to diet?	3.20 (1.60)	4.00 (1.41)	.066
9. Perform regular exercise to reduce high blood pressure?	3.44 (1.32)	4.31 (1.20)	.014
10. Believe advice from family or friend?	2.75 (1.30)	2.44 (1.30)	.386

Note. Response on the Likert scale; never = 1, seldom = 2, half the time = 3, most of the time = 4, always = 5.

Blood Pressure

The subject's systolic and diastolic blood pressures were documented at the initiation and at the completion of the program in three positions: (a) standing, (b) sitting, and (c) lying. Blood pressures were also recorded each week in two positions: (a) sitting and (b) standing. The standing position of the individual was used as a baseline. A blood pressure was considered elevated if the systolic blood pressure was equal to or higher than 140 mm/Hg and if the diastolic was equal to or higher than 90 mm/Hg.

Before the program started the participants' systolic blood pressure recording range was 100-186 mm/Hg; the mean of the systolic blood pressure was 148.62 mm/Hg, and the standard deviation (SD) was 22.72. The preprogram diastolic range was 48-90 mm/Hg; the mean was 73.62 mm/Hg; the SD was 9.11. The postprogram systolic blood pressure mean was 156 mm/Hg with SD of 19.70 and with a range of 104-180 mm/Hg. The postprogram diastolic blood pressure mean was 77.37 mm/Hg with SD of 9.11, and with a range of 60-94 mm/Hg. Table 3 shows that the preprogram recordings of systolic blood pressure were slightly lower than the postprogram blood pressure recordings at the completion of the study (pretest 148.62/73.62 and posttest 156/77.37). This slight increase might

indicate how difficult it is to augment the treatment of hypertension through an educational intervention in a short period of time.

Table 3

Level of Hypertension at Beginning and at Completion of the Blood Pressure Monitoring Program (N = 16)

Blood Pressure Parameter	Range (mm/Hg)	Mean (mm/Hg)	Standard Deviation
Preprogram			
Systolic	100-186	148.62	(22.72)
Diastolic	48-90	73.62	(9.11)
Postprogram			
Systolic	104-180	156	(19.70)
Diastolic	60-94	77.37	(9.11)

Note. The systolic and diastolic blood pressure mean increased after a three month period.

The mean for the length of time the participants had hypertension was 9 years. Several participants stated that they did not know their baseline blood pressure, but they were being treated by their doctors. Two participants in the program had extremely high blood pressure readings and were unaware of it. The researcher instructed them to seek an appointment with their physician as soon as possible. These participants sought health care and received new antihypertensive medication.

Summary of Results

At the completion of the program, the number of participants who had elevated blood pressure recordings had increased to 12 (75%). However, all participants who had elevated blood pressure recordings were taking anti-hypertensive medication and were visiting their physician on a regular basis. The scores from the SRAS questionnaire comparing the posttest responses with the pretest responses indicated an increase in adherence to maintaining a blood pressure therapy program. However, the mean blood pressure recordings were higher at the completion of the 12-week program than at the beginning.

Chapter 5

CONCLUSION AND RECOMMENDATIONS

This study was undertaken to determine whether adherence to hypertensive treatment regimens by elderly hypertensive volunteers improved after participating in a blood pressure monitoring program for 12 weeks. The two research questions were: (a) What is the level of adherence among elderly hypertensive clients? and (b) What is the level of hypertension among clients in a blood pressure monitoring program? This chapter summarizes the conclusions of this study and offers recommendations for further study.

Conclusion

The study found that there was an increased level of adherence among elderly hypertensive clients after the 12 weeks participation in a blood pressure monitoring program. Specifically, there was a statistically significant improvement in the area of taking medications as ordered by the physician ($p = .007$). Although weekly weights revealed that 69% of the participants were overweight, responses on the SRAS revealed no change in level of adherence to diet recommendations in pre- and posttest analysis; 50% of the participants responded that they always followed the physician's

advice to diet and 31% responded that they followed the physician's advice "most of the time." Likewise, responses did not indicate a change of the influence of family and friends between the start and finish of the 12-week monitoring program.

The level of hypertension among clients in the blood pressure monitoring program was measured by blood pressure recordings of the participants during the 12-week program. Individually, there was no significant difference noted between the first blood pressure recording and the last blood pressure taken. The majority of the participants were aware of their blood pressure levels and had been on a hypertension treatment program for several years. Many of the participants had been maintaining their present level of blood pressure with medication therapy. Blood pressure recordings revealed that systolic and diastolic blood pressures increased slightly at the end of the 12-week program.

Based on the study by Michnowicz (1989), these were not the expected results for the blood pressure recordings. The subjects in her study had slightly lower blood pressure recordings at completion. Variables not controlled for in this study could provide possible explanations for the higher blood pressure after the 12 weeks; for example, (a) individual

variation in stress, diet, exercise, medications, or medication dosage and (b) environmental differences related to changing the weekly meeting day.

Most of the study group had witnessed the complications of hypertension (such as stroke, heart and kidney problems) that had affected other members of the senior center. Although there was not a decrease in the level of blood pressure, information about the complications of hypertension and possible avenues of self-care will be beneficial to the participants of this research study.

Scope and Limitations

This study was limited by the small number of participants in the sample. For example, it is possible that the blood pressures of the two participants who were unaware of their high blood pressure distorted the mean for this study. It should be noted that the scheduled day of the week was changed halfway during the study. This inconvenience caused three participants to drop out. Another factor was language; a majority of the volunteers spoke Spanish while the researcher spoke English. Time was also a factor; the researcher took about 10 minutes with each participant to check blood pressures and to fill out their card; the waiting caused anxiety for some of the participants. The Hawthorne effect might have influenced the self-report responses on the SRAS.

The SRAS predominantly measured compliance to medications and communication with the physician. It did not measure increased knowledge of hypertension or types of therapy. However, educational materials on nutrition, medication, benefits of exercise, and chronic side effects of hypertension were presented by the researcher through videos, handout materials, and discussion groups.

The blood pressure monitoring program was intended to increase knowledge and motivation to participate in preventive activities in order to reduce the risk of complications from high blood pressure. Orem's (1980) self-care theory served as the conceptual framework for this study. This model proposed that a person's level of well-being related to one's level of self-care activities.

Recommendations

Chronic health problems related to hypertension in the elderly population are a major concern in America today. Additional studies to determine compliance and introduce behavior modification could provide helpful data to enhance appropriate therapy. Nurse managed centers promoting and maintaining health and well-being would provide a place for people with chronic health problems to visit for primary health care services.

Assessment tools to measure knowledge about hypertension and the benefits of exercise and diet are needed as well as an instrument to measure behavior modification while participating in a research study. Replication studies using control groups with a larger sample would improve the validity of the findings.

Summary

The study partially replicated a study conducted by Michnowicz (1989) to determine the effectiveness of a blood pressure monitoring program on elderly hypertensives. This research study differed from the Michnowicz study in: (a) the mean age of the participants was lower at 69.9 years; (b) the researcher recorded blood pressures weekly as well as introduced and reinforced educational information regarding nutrition, exercise, and medication; and (c) the population was primarily Hispanic and attending a senior center.

The study examined the effects upon level of adherence of a blood pressure monitoring program for elderly hypertensives by using a pre- and posttest Self-Reporting Adherence Scale (SRAS) questionnaire and by recording each participant's blood pressure level weekly. The study provided descriptive data including means and standard deviations for the systolic and diastolic blood pressure measurements. The level of adherence

was found to be higher at the end of the 12-week program, but the level of hypertension was also slightly increased.

The literature attests to the fact that the aging population of the U.S. faces increasing health risks due to complications from hypertension and that it is important to promote education and preventive health measures in community centers throughout the country (NHBPEP, 1994). The more accessible health services are to older adults the more the services will be utilized, allowing for early intervention and reduction in morbidity from the complications of hypertension.

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APPENDIX A

Classification of Blood Pressure

Classification of Blood Pressure for Adults Aged 18 Years and Older

Classification	Systolic (mm/Hg)	Diastolic (mm/Hg)
Normal	< 130	< 85
High Normal	130-139	85-89
Hypertension:		
Stage 1	140-159	90-99
Stage 2	160-179	100-109
Stage 3	180-209	110-119
Stage 4	> 200	> 120

Note. Recommended by the Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V. 1993. Archives of Internal Medicine, 153, 154-183).

APPENDIX B

Recommended Step-Care Therapy for Hypertension

Step-Care Therapy for Hypertension

Modified for the Elderly

Step 1: Non-Pharmacological Approaches

Sodium Moderation

Weight control

Alcohol restriction

Control of other cardiovascular risk factors (smoking, stress, exercise)

Step 2: Pharmacological Approaches

(at the physician's direction)

Diuretics

ACE (Angiotensin-converting enzyme inhibitors)

Calcium Antagonists

Beta-Blockers (only if unable to use one of the above. Use with great caution. Contraindicated with some conditions).

Note. If none of the above are effective, one of the following may be used with great caution:

Centrally acting adrenergic inhibitors

Peripheral-acting adrenergic inhibitors

Alpha-1 blocker

Vasodilator

Step 3 (one of the following)

Increase the dose of the first drug

Substitute another drug

Add a second drug of a different class than the first

*Step 4 (one of the following)

Add a third drug of a different class

Substitute another drug for the second drug

*Chlorthalidone, a sulfonamide diuretic, may be an effective first drug of choice in elderly hypertensives without major chronic conditions.

Step 5 (one of the following)

Further evaluation or referral

Add a third or fourth drug

Note. Recommended by the Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure (JNC V), 1993, Archives of Internal Medicine, 153, 154-183.

APPENDIX C

Self-Reporting Adherence Scale (SRAS)

Please circle one number for each question that best describes your answer. Please be sure to circle ONLY ONE for each question. Thank you!

1. Do you take your blood pressure medicine as it is ordered by your doctor or nurse practitioner?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

2. Even though you feel well, do you continue to take your blood pressure medicine?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

3. If you feel worse after you take a NEW blood pressure medicine, do you continue to take the medicine?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

4. Do you get another prescription filled or call your doctor or nurse practitioner BEFORE you run out of the blood pressure pills that you are taking?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

5. Do you attend scheduled appointments with your doctor or nurse about your high blood pressure?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

PLEASE CONTINUE TO THE NEXT PAGE

6. It is hard to remember to take medicine. Do you remember to take your blood pressure medicine that is ordered for you?

Never	Seldom	Half the time	Most the time	Always
1	2	3	4	5

7. Has the doctor told you to avoid certain foods or additives such as seasonings to decrease your blood pressure? How much have you changed your eating habits?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

8. Has your doctor suggested you go on a diet? How often do you follow the doctor's advice?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

9. If you have been told to take walks or to do some type of exercise because it helps to decrease your blood pressure, how often do you walk or exercise?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

10. If a family member or friend tells you that blood pressure can get better, how much do you believe them?

Never	Seldom	Half the time	Most of the time	Always
1	2	3	4	5

PLEASE CONTINUE TO THE NEXT PAGE

Please answer the following questions by checking appropriate answer or filling in blank space. Thank you.

11. What is your age?_____

12. What is your sex? Male_____ Female_____

13. What is your marital status at this time?

Single____ Married_____ Widowed____ Divorced____

14. If you are being treated for medical problems other than high blood pressure, would you please list them.

_____

_____

_____

_____

_____

_____

15. How old were you when were FIRST treated for high blood

pressure?_____(approximate age)

THANK YOU FOR TAKING TIME TO ANSWER THESE QUESTIONS!

APPENDIX D

San Jose State University

Human Subjects Institutional Review Board Approval

SJSU SAN JOSE STATE UNIVERSITY

A campus of The California State University

Office of the Academic Vice President • Associate Academic Vice President • Graduate Studies and Research
One Washington Square • San Jose, California 95192-0025 • 408/924-2480

TO: Kathleen Hansell
2667 Birchtree Lane
Santa Clara, CA 95051

FROM: Serena W. Stanford
AAVP, Graduate Studies & Research

DATE: June 2, 1995

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"A Replication Study of a Blood Pressure Monitoring Program for Elderly Hypertensives"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Serena Stanford, Ph.D., immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

APPENDIX E

Letter from Researcher

with

Director of Community Center's Response

2667 Birchtree Lane
Santa Clara, CA 95951
(408) 249-2349

March 31, 1995

Ms. Carolina Rossman
Director, Eastside Neighborhood Ctr
2150 Alum Rock
San Jose, CA 95112

Dear Ms. Rossman:

As per our telephone conversation on March 23, 1995, I appreciate you allowing me to conduct my research project at the Eastside center. The research study will be a blood pressure monitoring program on senior citizens 60 years of age and older. I hope to recruit 20 volunteers, and I will start after Easter.

The study will take place at a weekly meeting for 10-12 weeks. I will record each participant's blood pressure weekly. Every participant will be required to sign a consent form. Each participant will also be required to complete two short questionnaires, at the start of the program and at its completion. I am hoping for at least 20 volunteers for the program. They may withdraw at any time.

If this is agreeable to you would you please sign below to confirm that you have agreed to the research project being conducted at the East Side Senior Center, I have enclosed a stamped address envelope for your convenience. I can be reached at the above telephone number or on my beeper (408) 993-3658. Thank you again.

Gratefully yours,
Kathleen F. Hansell
Kathleen F. Hansell, RN

This to acknowledge that Ms. Hansell requested to conduct a research study: Blood pressure monitoring program of elderly hypertensives at the East Side Senior Center, San Jose, California..

DATE 04/05/95 SIGNATURE Carolina Rossman

APPENDIX F

Consent Forms

to Participate in the Blood Pressure Monitoring Study,

in English and Spanish

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One Washington Square • San Jose, California 95192-0057 • 408/924-3130 • Fax 408/924-3135

Agreement to Participate in San Jose State University Research

Responsible Investigator: Kathleen Hansell, RN

Title of Protocol: A Replication Study of a Blood Pressure Monitoring Program for Eldery Hypertensives

I have been asked to participate in a research study that is investigating high blood pressure of elderly people. The results of this study will help us to better understand if a method of blood pressure monitoring may assist in controlling hypertension in elderly people.

I understand that:

1. At the start and at the completion of this study, I will be asked to answer questions on a written survey by circling numbers. I also agree to have my blood pressure measured and attend a weekly blood pressure screening at: Eastside Senior Center

2. There are no identified physical or emotional risks.

3. The possible benefits of this study to me are 10-12 weeks of blood pressure screenings and a card for recording the reading.

4. The results of this study may be published, but any information from this study that can be identified with me will remain confidential and will be disclosed only with my permission as required by law.

5. Any questions about my participation in this study will be answered by Kathleen Hansell, RN (408) 249-2349. Present procedure complaints to: Dr. Bobbye Gorenberg.

For questions and complaints about research subjects' rights, contact Serena Stanford, Ph.D. (Associate Academic Vice President for Graduate Studies and Research) (408) 924-2480.

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6. My consent is given voluntarily without being coerced: I may refuse to participate in this study or in any part of this study, and I may withdraw at any time, without prejudice to my relations with SJSU and Eastside Senior Center Facility.

7. I have received a copy of this consent form for my file.

I HAVE MADE A DECISION WHETHER OR NOT TO PARTICIPATE. MY SIGNATURE INDICATES THAT I HAVE READ THE INFORMATION PROVIDED ABOVE AND THAT I HAVE DECIDED TO PARTICIPATE.

DATE:_____SUBJECT'S

SIGNATURE_____

DATE:_____INVESTIGATOR'S

SIGNATURE_____

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Contrato Para Participar en las Investigaciones de la Universidad de San Jose State

Investigadora Responsable: Kathleen Hansell. RN

Título de Protocolo: Reproducción de un Estudio para Supervisión de la Presión de Sangre para las Personas Mayores con Hipertensión

Yo había preguntado para participar en un estudio que está investigando la presión de sangre alta de las personas mayores. Los resultados de este estudio nos ayudarán entender si un metodo de supervisión de la presión de sangre puede controlar la hipertensión de las personas mayores.

Yo comprendo que:

1. Al principio y al fin de este estudio, voy a contestar preguntas escritas por medio de círculos en los numeros. También, doy permiso para que me tomen las medidas de la presión de sangre y consiento en asistir a reuniones cada semana en: Eastside Senior Center

2. No hay riesgos físicos o emocionales identificados con este estudio.

3. Los beneficios para mi de este estudio son de 10-12 semanas de la exploración de la presión de sangre y una tarjeta con los resultados.

4. Los resultados de este estudio podrían ser publicados, pero la información de mi quedará confidencial y la revelarán solamente con mi permiso requirido por la ley.

5. Las preguntas sobre mi participación en este estudio serán contestadas por la señora Kathleen Hansell. RN. al numero (408)249-2349. Favor de dirigir las quejas a: Dr. Bobbye Gorenberg

Para preguntas o quejas acerca de los derechos de las personas que son incluidas en una investigación, hable a Serena Stanford. Ph. D, al numero (408) 924-2480. (Academias Asociadas Vice Presidente para Investigaciones de Estudiantes Graduados.)

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6. Doy mi permiso voluntariamente sin fuerza alguna: Puedo rehusarme a participar en este estudio o en cualquier parte de este estudio, y puedo abandonar el proyecto en cualquier momento sin prejuicios a las relaciones que tengo con la Universidad de San Jose State y Eastside Senior Center facilidades.

7. Ya recibí una copia de este contrato para mi constancia.

HE TOMADO UNA DECISIÓN PARA PARTICIPAR O NO PARTICIPAR. MI FIRMA INDICA QUE YA LEÍ LA INFORMACIÓN ANTERIOR Y QUE HE DECIDIDO PARTICIPAR.

FECHA:_____ SUJETO

FIRMA:_____

FECHA:_____ INVESTIGADOR

FIRMA:_____

APPENDIX G

Individual Record for Blood Pressure, Medications, and Weight

Medication and Blood Pressure Record
for Clients enrolled in the Blood Pressure Monitoring Program

Name:
ID Number
Location:

Record of Visits	Date	Date	Date	Date	Date	Date
Lying B/P						
Sit B/P						
Stand B/P						
Weight						
Diet						
Sodium						
Cholesterol						
Alcohol						
Caffeine						
Smoking						
Exercise						
Medication						
Follow-up Visit RN						
MD						